

Trend Study 17-62-02

Study site name: Grove Creek.

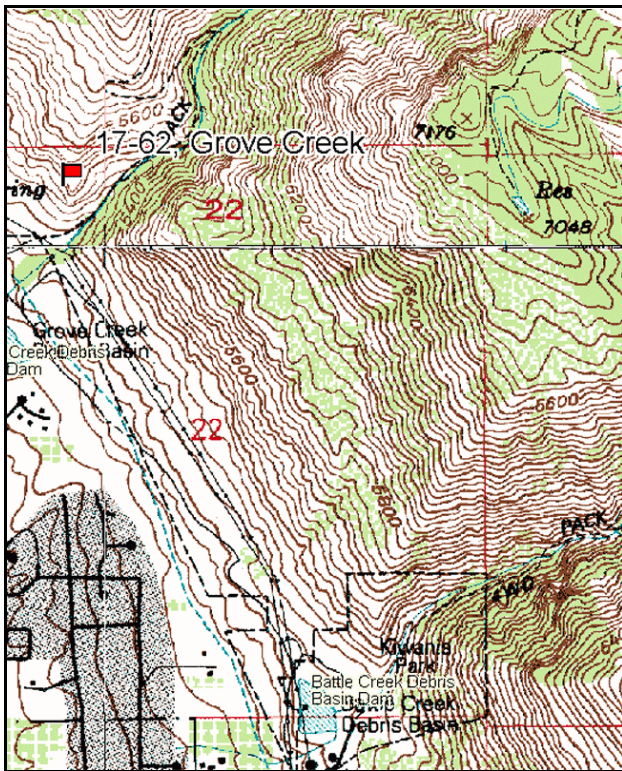
Vegetation type: Stansbury Cliffrose.

Compass bearing: frequency baseline 355 degrees magnetic.

Frequency belt placement: line 1 (11 ft), line 2 (34 ft), line 3 (59 ft), line 4 (71 ft), line 5 (95 ft). Rebar: belt 2 on 3ft., belt 3 on 2ft., and belt 4 on 4ft.

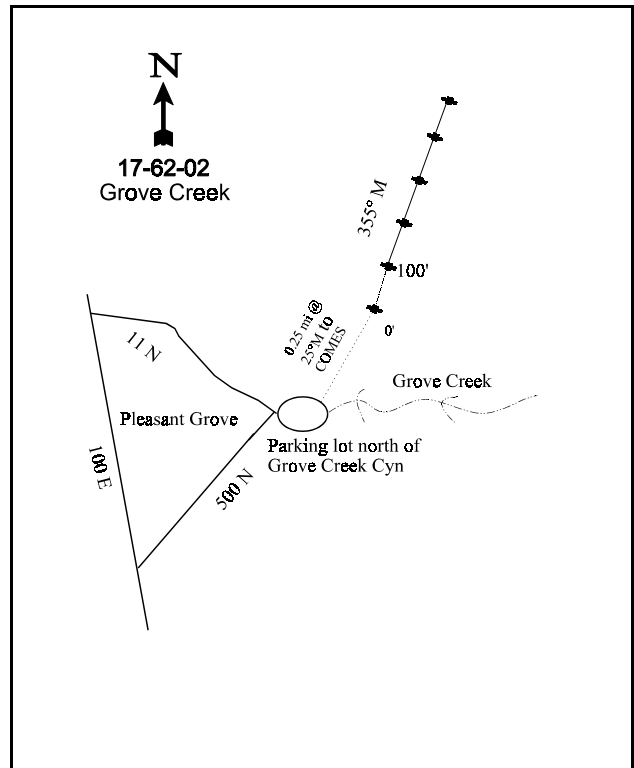
LOCATION DESCRIPTION

From the junction of Highway's 89 (State St.) and 146 in Pleasant Grove, continue on Highway 146 until 500 North, just before the school. Continue on this road until it comes to the parking lot at the mouth of Grove Creek Canyon. From the parking lot, follow the ridge for 0.25 miles at 25 degrees magnetic to the 0-foot stake in the cliffrose.



Map Name: Lehi

Township 4S, Range 2E, Section 29



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4469577 N, 439757 E

DISCUSSION

Grove Creek - Trend Study No. 17- 62

The Grove Creek trend study was established in 2002 to monitor important deer and bighorn sheep winter range above Pleasant Grove. Bighorn sheep were transplanted into the area in the late 1990's. The site was placed on a moderately steep slope just north of the mouth of Grove Creek. It has a southwest aspect with an elevation of 5,470 feet. The site contains a sparse stand of cliffrose with some mountain big sagebrush in the understory. Cheatgrass dominates the herbaceous understory and perennial grasses and forbs are not abundant. The site has become increasingly important winter range as residential development has expanded in this area. The only available winter range is found on the steeper slopes on Forest Service land. The area is used heavily by wintering deer and a few elk. A pellet group transect read on site in 2002 estimated 72 deer days use/acre (177 ddu/ha) and 5 elk days use/acre (12 edu/ha). Bighorn sheep also use the area with sheep pellet groups being about half as numerous as deer. It is very difficult to differentiate bighorn sheep pellet groups from mule deer on this site. Every pellet group was carefully evaluated but some of the deer pellet groups may be bighorn sheep. Bighorn sheep use was estimated 38 days use/acre (94 sdu/ha) in 2002.

Soil at the site is relatively shallow and very rocky. Effective rooting depth is estimated at only about 9 inches. Soil parent material is limestone which is exposed as bedrock and large rock outcrops on the site. As with the trend study at American Fork Canyon (17-61), the effective rooting depth measurements are not a good indication of actual rooting depth for the deeper rooted shrubs. The site is terraced and soil movement down slope is occurring and inevitable due to the steep slope and lack of perennial herbaceous vegetation. The soil erosion condition class was determined to be slight in 2002. Due to the high rock content, soil temperature is relatively high averaging nearly 75° F at 8.5 inches in depth. Surface temperatures are much higher and make seedling establishment of shrubs very difficult.

The site supports a small population of large cliffrose with some mountain big sagebrush in the understory. Density of cliffrose was estimated at 120 plants/acre in 2002. Mature cliffrose average over 5 feet in height making some plants partly unavailable to browsing. Utilization was moderate to heavy on available mature plants but light on young plants. Vigor was normal on all plants and annual leader growth averaged 3.3 inches in 2002. Mountain big sagebrush had a density estimated at only 380 plants/acre. Utilization was variable with some plants displaying a clubbed growth form while others appeared to be unutilized. Just over half of the population was classified as decadent, with 70% of these classified as dying. No seedlings or young plants were encountered. A few scattered white rubber rabbitbrush offer some additional forage.

The herbaceous understory is dominated by cheatgrass which accounted for 81% of the total grass cover or 68% of the total herbaceous cover. It had a high cover value of 19%. Bluebunch wheatgrass was the most abundant perennial. It had a cover value of nearly 4% which accounted for 16% of the total grass cover in 2002. Other perennial grasses are rare in their occurrence. Forbs are lacking, producing a total of less than 5% cover. The forb component is also totally dominated by annuals. Pale alyssum and storksbill are the most dominant. Perennial forbs are rare.

2002 APPARENT TREND ASSESSMENT

Soil conditions are poor with marginal protective ground cover. Due to the steep slope, some erosion is inevitable but a healthy herbaceous understory of perennial grasses and forbs would do much to stabilize the slope. The small stand of cliffrose appears stable. It displays moderate to heavy use but has good vigor and no decadent plants were encountered. Mountain big sagebrush appears to be feeling the effects of drought and a steep west aspect. This is also a marginal site for sagebrush due to the shallow, rocky soil. Just over half of the population was classified as decadent and 70% of those appear to be dying. No recruitment was noted, especially with the competitive understory of winter annuals. It appears that the population will decline in the future. The herbaceous understory is poor with most of the cover coming from cheatgrass and annual forbs.

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 62

T y p e	Species	Nested Frequency '02	Quadrat Frequency '02	Average Cover % '02
G	Agropyron spicatum	114	50	3.82
G	Bromus japonicus (a)	60	25	.25
G	Bromus tectorum (a)	396	98	19.07
G	Poa bulbosa	6	3	.09
G	Poa fendleriana	1	1	.00
G	Poa secunda	37	15	.40
Total for Annual Grasses		456	123	19.32
Total for Perennial Grasses		158	69	4.31
Total for Grasses		614	192	23.64
F	Alyssum alyssoides (a)	135	55	.40
F	Ambrosia psilostachya	6	2	.15
F	Antennaria rosea	1	1	.03
F	Artemisia ludoviciana	5	1	.03
F	Astragalus utahensis	-	-	.00
F	Camelina microcarpa (a)	3	1	.00
F	Erodium cicutarium (a)	145	51	2.34
F	Holosteum umbellatum (a)	5	3	.01
F	Lathyrus brachycalyx	28	9	.31
F	Lappula occidentalis (a)	4	1	.18
F	Ranunculus testiculatus (a)	154	49	.83
F	Sisymbrium altissimum (a)	7	3	.09
F	Tragopogon dubius	4	1	.00
Total for Annual Forbs		453	163	3.88
Total for Perennial Forbs		44	14	0.54
Total for Forbs		497	177	4.42

BROWSE TRENDS --

Herd unit 17 , Study no: 62

T y p e	Species	Strip Frequency '02	Average Cover % '02
B	Artemisia tridentata vaseyana	19	1.65
B	Chrysothamnus nauseosus albicaulis	8	1.50
B	Cowania mexicana stansburiana	6	2.70
B	Gutierrezia sarothrae	2	-
B	Rhus trilobata	0	.03
Total for Browse		35	5.90

CANOPY COVER -- LINE INTERCEPT

Herd unit 17 , Study no: 62

Species	Percent Cover '02
Artemisia tridentata vaseyana	.75
Chrysothamnus nauseosus hololeucus	1.17
Cowania mexicana stansburiana	2.75

Key Browse Annual Leader Growth

Herd unit 17 , Study no: 62

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	6.3
Cowania mexicana stansburiana	3.3

BASIC COVER --

Herd unit 17 , Study no: 62

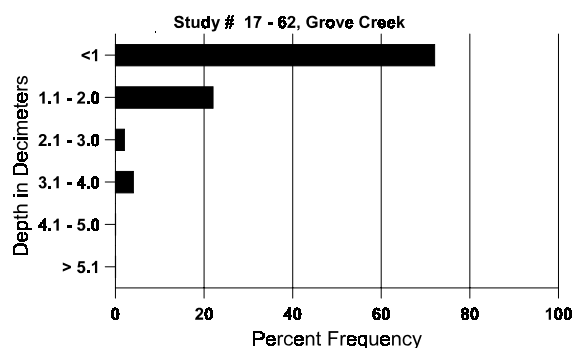
Cover Type	Nested Frequency '02	Average Cover % '02
Vegetation	436	35.56
Rock	290	9.63
Pavement	396	16.01
Litter	470	31.64
Cryptogams	10	.21
Bare Ground	327	22.88

SOIL ANALYSIS DATA --

Herd Unit 17, Study no: 62, Grove Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
8.7	74.6 (8.6)	7.3	33.3	34.7	32.0	3.4	11.4	198.4	.7

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 62

Type	Quadrat Frequency	Pellet Transect	
		Pellet Groups per Acre	Days Use per Acre (ha)
	'02	'02	'02
Bighorn Sheep	25	496	36 (89)
Elk	1	61	5 (12)
Deer	11	931	72 (177)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 62

Artemisia tridentata vaseyana																		
A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches)		Total				
		1	2	3	4	5	6	7	8	9		1	2		3	4	Ht. Cr.	
M	02	3	2	4	-	-	-	-	-	-	9	-	-	-	180	24	35	9
D	02	3	3	3	-	-	-	1	-	-	3	-	-	7	200			10
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	320			16
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'02		26%				37%				37%								
Total Plants/Acre (excluding Dead & Seedlings)												'02	380	Dec:	53%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus albicaulis																		
M	02	4	1	-	-	-	-	-	-	-	5	-	-	-	100	28 50	5	
D	02	3	-	-	-	-	-	1	-	-	2	-	-	2	80		4	
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
% Plants Showing '02		<u>Moderate Use</u> 11%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 22%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	180	Dec:	44%	
Cowania mexicana stansburiana																		
Y	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	02	-	-	-	-	1	1	-	1	-	3	-	-	-	60	65 79	3	
% Plants Showing '02		<u>Moderate Use</u> 17%			<u>Heavy Use</u> 17%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	120	Dec:	-	
Gutierrezia sarothrae																		
M	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	8 12	2	
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	440		22	
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	40	Dec:	-	